DOCUMENT RESUME

ED 200 756 CE 028 525

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TITLE Factors Discriminating between Females Electing Traditional and Nontraditional Programs of Vocational Study in High School.
PUB DATE Apr 81
NOTE 34p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA, April 13-17, 1981).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Comparative Analysis; Family Influence; *Females; *High Schools; *Influences; *Nontraditional Occupations; Occupational Aspiration; Parent Attitudes; Peer Influence; Sex Role; *Sex Stereotypes; Student Attitudes; Students; Teacher Attitudes; Teacher Influence; *Vocational Education; Work Attitudes
IDENTIFIERS *Significant Other

ABSTRACT

A study was conducted to describe the relationship of the attitudes of significant others and other career-influencing factors to the attitudes which both traditional and nontraditional female students in vocational education have toward nontraditional work roles for men and women. Another facet of the study was to determine whether these attitudes, in association with other career influences, are predictors of female students' decisions to elect to study in high school programs in vocational education considered nontraditional for their gender. Through a post-facto study of 406 females in high school vocational courses, the hypothesis was supported that attitudes of significant others, such as parents, teachers, administrators and peers, as well as the attitudes of students, themselves, are influential in the development of work-role/sex-role attitudes of adolescent females. Attitudes of teachers, of the subjects themselves, and of male peer groups were found to be significant discriminators between females studying in traditional programs and their peers studying in nontraditional programs of technical and industrial education. Implications of the study include the need for non-sex-stereotyped counseling for female students in selecting vocational courses, and perhaps parent education courses to assist parents in perceiving the broader employment opportunities available for women. (Author/KC)

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Factors Discriminating between Females Electing Traditional and Nontraditional Programs of Vocational Study in High School

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Paper presented at the 1981 Annual Meeting of the American Educational Research Association

Los Angeles, April 1981

Abstract

This study describes the relationship of the attitudes of significant others and other career influencing factors to the attitudes which both traditional and nontraditional female students in vocational education have toward nontraditional work roles for men and women. Another facet of the study was to determine whether these attitudes, in association with other career influences, are predictors of female students' decision to elect to study in high school programs in vocational education considered nontraditional for their gender.

The hypothesis that attitudes of significant others, such as parents, teachers, administrators and peers, as well as the attitudes of students, themselves, is influential in the development of work-role/sex-role attitudes of adolescent females which was supported in the study. Attitudes of teachers, attitudes of the subjects, themselves, and attitudes of male peer groups were found to be significant discriminators between females studying in traditional programs (home economics, business and office occupations) and their peers studying in nontraditional programs of technical and industrial education (carpentry, automotive mechanics, plumbing and similar areas).

This paper describes the development and validation of battery instruments either developed and validated or adapted for use with educators and high school students in studying sex bias in attitudes toward vocational choice.

Despite legislative policies and intensified efforts of vocational educators to eliminate sex bias from the curriculum, enrollment of girls in "hard core" male dominated programs of vocational educational has continued to lag. Investigators, such as Lewis and Kaltreider (1976) have suggested that the real barriers to women's entry into nontraditional career areas are found within the attitudes of the women, themselves.

The influence of social factors, including the attitudes of significant others, has been postulated by Ellis (1977) as a major factor in fostering sex role bias in the attitudes of high school students toward appropriate work roles. This influence appears to be particularly significant in the career development of rural adolescents.

Lewis and Kaltreider (1976) focused on the identification of steps that can be taken to encourage young women to enter vocational areas that have been traditionally limited to males. They studied nontraditional enrollment of females at the secondary levels, but their subjects were enrolled in "gray" areas such as vocational agriculture, printing, industrial chemistry or television arts, rather than "hard core" male programs, such as construction, metal working or auto mechanics. Lewis and Kaltreider found that students selected nontraditional vocational programs on their own. Over half the high school students indicated that they, themselves, were most influential in their choices of nontraditional programs. Parents were found to have the most "outside influence" on students' plans to enter nontraditional courses. At the postsecondary level, Kane (1976) found that career influences expressed in order to their importance to decisions regarding nontraditional career studies were attitudes of mothers, fathers, and husbands/boy friends.

The influence of male teachers, particularly vocational education teachers, on female students' decision to enter nontraditional studies at the postsecondary level was also documented by Kane and her associates. Conversely, women teachers were more influential in the female students' decision to study in traditional fields.

Other investigators have documented the influence of significant others in combating existing sex stereotypes in occupational choice. Jolley (1975) suggested that sex bias exists in the attitudes of teachers, counselors, administrators, and in the attitudes of the students, themselves, toward women's choice of appropriate careers.

Trigg and Perlman (1976) indicated that the peer group, rather than parents and teachers, provides the dominant attitudinal reference group for adolescents; hence, they may well be the "significant others" in which high school students see their expected sex role reflected most intensely. Consequently the attitudes of the peer group toward the appropriateness of study areas for female students may be a critical factor in influencing females to select themselves out of nontraditional career areas.

Despite how much is known about career development patterns for women in vocational education, much remains to be learned. Hoffman (1973) reported that teenage females overwhelmingly planned traditionally feminine careers and traditional work-marriage-child bearing life patterns, regardless of whether they accepted or rejected traditional stereotypes for masculine or feminine attributes, or whether they accepted the traditional stereotypes for women in their own self concept or not. Similarly, Mitchell (1977) found females seeking enrollment in high school programs believed that occupational opportunities are broadening for females;

however, in practice, the applicants still limited their own choices to those most stereotypical to their gender.

Such decisions by women to pursue stereotyped careers regardless of information and interests, appear to be based on personal preferences, economic factors or internal pressures resulting from the general social milieu identified as important in the career development of women by investigators such as Steele (1974), Kievit (1976), and Ellis (1977a, 1976b).

THE RESEARCH PROBLEM

The problem in this study was twofold: (1) to determine whether there is a relationship of background variables and other career influencing factors to the attitudes which both traditional and nontraditional female students have toward nontraditional work roles for women, and (2) to determine whether these attitudes are predictors of whether or not students elect to study in nontraditional programs, when other career influencing factors are also considered.

It was hypothesized that attitudes of significant others, such as parents, teachers, counselors, administrators and peers, are influential in the development of the work-role/sex-role perceptions of high school females. It was further hypothesized that the attitudes which the female subjects, themselves, hold toward appropriate work roles for the two sexes are significant determinants of whether they choose to elect either traditional or nontraditional courses of study.

To investigate this problem, answers to three research questions were sought:

1. What relationship is there between the perceived attitudes of significant others toward career development plans of female students studying in traditional vocational programs and these students' attitudes toward nontraditional work roles?

2. What relationship is there between the perceived attitudes of significant others toward career development plans of female students studying in nontraditional vocational programs and these students' attitudes toward nontraditional work roles?

3. What combination of background and career influence variables significantly differentiate between females enrolled in traditional and nontraditional programs of vocational education at the high school level?

RESEARCH PROCEDURES

Overview

In form, the reported study was an ex post facto investigation. By their own volition, the female students had elected either traditional or nontraditional courses in vocational education in 20 of the 60 secondary level vocational centers located throughout Mississippi in rural areas. Nontraditional areas of study for girls were those other than programs in health services, occupational home economics, business and office occupations and cosmetology. Nearly 90% of the subjects included in the study were training for occupations in the technical and industrial phases of vocational education. Independent variables studied as predictors of attitudes toward men and women working in nontraditional areas were race, grade point average, perceived influence of fathers, mothers, teachers, counselors, school administrators, other family members, male friends,

and female friends on choice of vocational study. Also, the perceived attitudes of these significant others toward students studying in areas considered nontraditional for their gender were employed in this predictor set.

Factors studied as potential discriminators between those females studying in traditional and nontraditional areas of vocational education, respectively, were: (1) attitudes associated with career maturity; (2) reasons claimed for choosing a particular study program; (3) student attitudes indicating sex bias toward women working in nontraditional jobs; (4) students' perception of the influence of significant others on choice of study area; and (5) teachers' attitudes toward appropriate sex and work roles.

Sample

The total sample for the study included 406 females enrolled in vocational courses at the high school level, of whom 227 were in courses classified as nontraditional and 179 were studying courses considered traditional for women. These students ranged in age from 14 through 20 years with nearly 90% of the sample being 16 to 18 years old. Approximately 55% of the females in nontraditional studies were black while 45% of this group were white. In the traditional group, nearly 65% of the sample were white females, and 35% were black females. The students were classified academically as either tenth, eleventh, or twelfth graders.

The vocational educator group included 20 program directors, 8 counselors, and 56 instructors. Thirty-five of the instructors (19 male and 16 female) had not taught nontraditional students in their classes and 21

teachers (16 male and 5 female) currently had nontraditional students enrolled in their courses. The teacher groups were also classified as "traditional" or "nontraditional" according to whether they had worked with traditional or nontraditional students in vocational classes.

Measurement of Variables

Four instruments were used for data collection with students. They were the attitudinal scale of Crites' Career Maturity Inventory (CMI) (Crites, 1973), the Vocational Student Background Survey (VSBS), the Characteristics of Workers Survey (CWS), and the Career Suitability Index (CSI). Designed by the investigators, the last three instruments were validated with a sample of secondary vocational students prior to their use in the study. In addition, the Sex Role Attitude Survey (SRAS) was designed by the investigators to measure attitudes of educators toward appropriate overall sex roles for women.

Career Maturity Inventory/Attitude Scale

The attitude scale of the Career Maturity Inventory (CMI) was employed to assess general vocational maturity of students in the study. This instrument, according to Crites (1973), was designed to measure attitudes that are critical in realistic career decision-making. That selecting an occupation is a process which spans a considerable number of years, usually from late childhood to early adult, was the rationale upon which Crites developed his instrument.

Internal consistency estimates for grades 6 through 12 were calculated with the Kuder-Richardson Formula 20 and ranged from .65 to .84

with a mean of .74 (Crites, 1973). Since the instrument was planned to be composed of five related, but not identical clusters of traits, these measures of internal consistency for the total attitude score did not appear unreasonable.

Crites also reported a correlation of .71 for 1,648 students in stability studies when the subjects were tested and retested over a one-year interval.

Vocational Student Background Survey

The Vocational Student Background Survey (VSBS) was a questionnaire developed to secure data from vocational students relative to their backgrounds and their perceptions of career motivation factors. Ten of the 20 items of the VSBS were planned to secure general demographic, socio-economic and work experience data from the students. Five items elicited data relative to the students' decision to study in their particular program in vocational education, including the time the decision was made, their best reason for deciding on the elected area of study, perceived reactions of parents, friends and educators to their career choices and the relative influence of significant others on their choice of study program. Two items assessed students' perceptions of the influence of significant others on traditional study choices of males and females (in general). Three items were designed to determine future career plans of subjects, relative to their current studies.

The content of this instrument was established through a careful examination of the literature and through consultation with nationally recognized specialists in the vocational education for women. Four of the items relating to career influences were designed to secure scale scores

through the use of Likert-type responses. The other items were multiple choice in structure and were scored as nominal variables. Coefficients of internal reliability were computed for each of the scales assessing career influences. A coefficient alpha statistic, described by Veldman (1967) was employed for this purpose. Coefficients of internal consistency ranging from .75 to .86 were determined for scales relating to people influences, socioeconomic influences and attitudes of significant others toward men and women working in nontraditional jobs as perceived by high school students. An overall internal reliability of .92 was derived for the total set of career influencing factors.

Characteristics of Workers Survey

The Characteristics of Workers Survey (CWS) was also developed by Walker and Handley (1978) to measure attitudes of educators and students toward men and women employed in occupations considered nontraditional for their sex. It was constructed on a semantic differential format. Rather than relating to a word concept, subjects were asked to respond to a short description of a female or male worker employed in a nontraditional work role.

Items of the CWS consisted of six work situations in which male and female workers are central in three of the situations. Each situation was evaluated by the subjects responding to 10 seven-point rating scales where each scale contains a bipolar adjective pair. Subjects made their responses by marking on the scale how they perceived the degree of relationship between the adjective pair continuum to the work situation. Adjective pair uses in this instrument were: good-bad, strong-weak, excitable-calm,

wise-foolish, beautiful-ugly, masculine-feminine, positive-negative, active-passive, hard-soft, and competent-inadequate. For purposes of data analysis, response options were recoded so that those who scored high on the scales were perceived as less biased toward a nontraditional situation than those who scored low; i.e., high scores indicated more positive attitudes. The maximum score on each scale was seven while the minimum score was one.

Prior to its use in this investigation, the CWS was administered to 208 subjects (educators and students) in a pilot study. A principal component factor analysis with varimax rotation, designed by Dixon (1975), yielded 14 factors explaining 71% of the total variance in the instrument. In later studies, employing data from subjects in the current study, only 10 factors emerged when responses to the CWS were subjected to the same factor analysis. These factors were nearly identical in structure with the first 10 of the pilot study, and they related to 56% of the total variance. It was decided to employ the results of the second principal component analysis for use in the final study since these data were the more conservative estimates of factor components. A summary of the 10 derived factors is presented in Table 1.

Items with high loadings (.40 or higher) on Factor I were eight adjective pairs from the work situation which described a male working as an office receptionist. Factor II consisted of seven adjective pairs from the work situation describing a male nurse. Factor III contained seven adjective pairs from a situation describing a female airline pilot. Factor IV was made up of seven adjective pairs describing a female automobile mechanic. Factor V contained seven adjective pairs which described

Table 1

Description of Factors Derived from Characteristics of Workers Survey

Factor Descriptions[a]	Cumulative Proportion of Total Variance	Variance Explained (Eigen-value)
NTM Work Role (Receptionists)	.221	12.246
NTM Work Role (Nurse)	.285	3.875
NTF Work Role (Airline Pilot)	.390	3.278
NTF Work Role (Automotive Mechanic)	.382	2.549
NTM Work Role (Day-Care Aide)	.421	2.288
NTF Work Role (Welder)	.453	1.968
NTF/Femininity Scale	.484	1.843
NTM-NTF/Self-Control Scale	.512	1.659
NTM/Masculinity Scale	.536	1.472
NTM-NTF/Competency Scale	.558	1.316

[a] NTM = Nontraditional Male
NTF = Nontraditional Female

a male day-care aide. Factor VI consisted of seven adjective pairs describing a female welder. No attempt was made to name these six factors as they represented attitudes toward the work situations as perceived independently according to the type work involved rather than as an overall perception of occupational sex roles. Since, however, the same adjectives consistently appeared in these six factors, they could be labeled as "CWS-Work Role Scales." All adjectives loading on these factors related to the evaluative and potency dimensions of attitudes as described by Osgood, Suci, and Tannenbaum (1957).

Factor VII contained adjectives (hard-soft, masculine-feminine) from each of the work situations where females were the central figures. This factor appeared to indicate that women are perceived as soft and feminine when working in nontraditional career areas. This factor has been labeled the "NTF/Femininity Scale." Factor VIII contained only one adjective pair (calm-excitable), but it was pulled from all six work situations. These data appeared to indicate a dimension of attitudes where men and women were perceived as calm in nontraditional work roles. This factor has been labeled the "NTM-NTF/Self-Control Scale." Factor IX was made up of one adjective (masculine-feminine) from the three situations where men were employed in nontraditional work roles. This factor seems to imply in this attitudinal dimension that men were perceived as masculine when working in traditionally female areas. Factor IX has been labeled the "NTM/Masculinity Scale." Factor X contained one adjective pair (competent-inadequate), drawn from all six work situations. These data seem to indicate that men and women were perceived in one dimension of the measured behavior as competent when working in occupations considered nontraditional

for their sex. This factor has been labeled the "NTM-NTF/Competency Scale."

Career Suitability Index

The Career Suitability Index (CSI) was designed by the investigators to assess sex stereotypes in the attitudes of educators and students toward the appropriateness of selected areas for vocational study by either males or females at the secondary level. This instrument listed 22 career areas in which vocational training is offered in Mississippi at the high school level. Career areas chosen for this list were those most popularly elected by students on a statewide basis. These areas also traditionally were dominated in enrollment by members of one sex.

Prior to use in this study, this instrument was also field-tested with 46 students and educators at a secondary school vocational center. Subjects were requested to mark each of the 22 career areas as either "appropriate" or "inappropriate" for males and females, respectively. Career areas marked as "inappropriate" were considered as an indication of sex bias toward career suitability for both sexes. Then, the total number of "inappropriate" responses was computed for males and for females. The two scores derived in this computation were considered as: (1) bias in attitudes toward career suitability for males (CSIM), and (2) bias in attitudes toward career suitability for females (CSIF). Internal reliability for the two scales was established by computing alpha coefficients from procedures developed by Veldman (1967). Internal reliability coefficients of .96 and .96 were respectively determined for the CSIM scale and the CSIF scale.

Sex Role Attitude Survey

The Sex Role Attitude Survey (SRAS) was developed to assess the attitudes of adults toward the role of males and females in the emerging society.

The instrument was adapted from a survey of attitudes developed for the Educational Relations Department of J. C. Penney Company and was used with permission from the J. C. Penney Company. The 43 items of the SRAS elicit responses from subjects to measure their attitudes toward stereotypes of masculinity and femininity of appropriate lifestyles and toward attitudes of equality in the work role and family responsibilities for men and women.

The SRAS was administered to 208 educators in a pilot study in an attempt to isolate principal components of the instrument which relate to sex role bias. These educators were working in both vocational and non-vocational areas of the curriculum in East-Central Mississippi and North-West Alabama. Responses to the instrument were scored to show the degree of sex role bias reflected. A higher score on items indicated more bias in attitudes.

Once each item was scored, the derived measures for the 43 criteria were then submitted to an image factor analysis followed by orthoblique rotation featured in Kaiser's Second Generation Little Jiffy (Kaiser, 1970), and reported by Dixon (1975). Results of this analysis yielded three factors which explained 34% of the total variance in responses. While the factors generated described only about one-third of the variance in attitudes expressed on the SRAS, they were meaningful, relative to the logic of sex role stereotype and for the purposes of the research design.

Tables 2-4, respectively, summarize the rotated factor loadings for the separate items of the Sex Role Attitudes Survey on the three derived factors. Thirteen items, loading .30 or above, were judged to contribute effectively to a description of the first factor which explained over 25% of the total variance on the instrument.

Table 2

Factor I: Sex Stereotyped Attitudes Toward Work Role

Item No.	Description	Factor Loading
23	Women should not be encouraged to prepare themselves to work in jobs traditionally held for men.	.922
22	My religious convictions are such that I believe the man (husband/father) should be the final authority in matters concerning the family.	.902
25	Men should not be encouraged to prepare themselves to work in jobs traditionally held by women.	.887
26	I have not given much thought to sex role stereotyping.	.780
24	As a female, I would expect to earn the same salary as a man who does the same work.	.730
9	A bright women should conceal her intelligence, otherwise she will hinder her chances of dating and marriage.	.630
38	When both wife and husband work full-time, they should split child-care 50-50.	.588
11	A man who cries is not very masculine.	.588
10	Little children need their own mothers, full-time.	.328
13	The special privileges that men extend to women more than offset any discrimination they practice against them.	.427
15	A woman who argues logically and intelligently in her everyday interactions is not very feminine.	.436
37	When both the wive and husband work full-time they should split the work 50-50.	.474
42	John and Mary have no children since both want to actively pursue their careers. Mary is offered an excellent promotion but it would require moving to another state. Mary should consult her husband before she takes the promotion.	.466

Factor Computation:

Fac I = 23 + 22 + 25 + 26 + 24 + 9 + 38 + 11 + 10 + 13 + 15 + 37 + 42

Table 3

Factor II: Sex Stereotyped Attitudes Toward Personal Traits

Item No.	Description	Factor Loading
33	Empathy and intuition are not equally common in both sexes.	.940
31	Nurturing capacity is not equally common in both sexes.	.883
32	Ability to reason abstractly is not equally common in both sexes.	.794
28	Capacity for deep feelings is not equally common in both sexes.	.703
29	Independence is not equally common in both sexes.	.690
30	Objectivity and rationality is not equally common in both sexes.	.676
1	One sex has more advantages than the other in scciety.	.481
27	Aggressiveness is not equally common in both sexes.	.481
12	The institution of marriage in its present form is more inhibiting than fulfilling.	.313
34	Mrs. R., a mother of 3 children (ages 2, 5, and 8), works full-time. What reason given below do you feel justifies her working full time? Anything except that she finds her work fulfilling.	.514
35	Judy, a ninth grader, has been told by her mother to quit football in the neighborhood. From her perspective, which reason justifies the mother's directive? Any reason given.	.393
43	Doll-playing for an 8-year-old boy is effeminate.	.328

Factor Computation:

Fac II = 33 + 31 + 32 + 28 + 29 + 30 + 1 + 27 + 12 + 34 + 35 + 43

Table 4

Factor III: Bias Toward Non-Stereotyped Lifestyles

Item No.	Description	Factor Loading
6	Salaries, promotions and hiring should be equal for men and women.	.529
2	The best way for most women to develop their potential is by not being good wives and mothers only.	.405
4	The communications media degrades women by portraying them as sex objects and/or mindless dolls.	.401
5	Children's books should not promote the traditional roles for men and women.	.481
16	Many women who do the same work as their male colleagues earn substantially less money.	.367
18	The housewife-mother role does not really provide women with enough opportunity for self-fulfillment.	.464
19	A young man who enjoys cooking, sewing and taking care of young children should discuss these interests very cautiously, since he is likely to be considered effeminate.	.305
20	Preferential treatment for women in hiring and promotion is not appropriate to make up for past discrimination.	.432
39	Women in first class rank in medical school should strive to maintain that rank.	.436
40	Mr. X. is biased against women because he chooses Mr. G. over Miss M., even though they appear to have equal qualifications.	.357
41	Mr. T. and Mrs. T. both work half-time and care for the children half-time. What about Mr. T.? It takes away from his masculinity; he could never be respected.	.481

Factor Computation:

Fac III = 6 + 2 + 4 + 5 + 16 + 18 + 19 + 20 + 39 + 40 + 41

Stereotypes in Work Role. This first factor was characterized by strong loadings of the male and female stereotyped roles related to the world of work. Two items which loaded most on this factor in a negative direction were "Women should be encouraged to prepare themselves to work in jobs traditionally held by men" and "Men should be encouraged to prepare themselves to work in jobs traditionally held by women." Another item which loaded heavily on this factor was "My religious convictions are such that I believe the man (husband/father) should be the final authority in matters concerning the family." Also, persons who held these views agreed that they had not given much thought to sex role stereotyping. They thought that a bright woman should conceal her intelligence, otherwise she will hinder her chances of dating and marriage, and that a woman who argues logically and intelligently in everyday interactions is not very feminine. They felt that little children need their own mothers, full-time, and that a man who cries in not masculine. Furthermore, subjects who scored high on this factor felt that the special privileges men extend to women more than offset any discrimination they practice against them. Surprisingly, however, persons holding these stereotyped views felt that if both the wife and husband worked full-time, they should split the work at home on a 50-50 basis and that females should expect to earn the same salary as men for the same work. This first factor, therefore, was labeled "Stereotyped Work Roles."

Stereotyped Personal Traits. Factor II measured six stereotypes related to the personal traits of men and women. The 22 items of the SRAS which loaded on this factor explained 6.6% of the variance in responses measured on the instrument. Persons who score high on this

factor believe that there is equal commonality in both sexes for feelings of empathy and intuition, nurturing capacity, ability to reason abstractly, capacity for deep feelings, independence, objectivity, rationality and aggressiveness. Persons who hold these attitudes, as related to Factor II, also believe that one sex has more advantages than the other in society. They believe that the institution of marriage in its present form is more inhibiting than fulfilling. Further, they believe that football, for any reason, it not a game for girls; nor should eight-year-old boys play with dolls. They feel that women should work outside the home only if their income is needed for family support. In further studies of items loading on this factor, it was found that men scored higher on this factor than did women. Therefore, it is hypothesized that this component measures stereotyped attitudes of masculinity-femininity.

Stereotype in Lifestyles. Factor III of the SRAS explained 7.1% of the variance in attitudes toward sex roles not already depicted by the first two factors. The 11 items composing this scale elicited attitudinal responses associated with lifestyles for both men and women. This factor appeared also to have a strong work role orientation, but, in addition, it was characterized by items related to the social and general achievement role of the sexes. The items which loaded most heavily on the factor described attitudes saying that (1) salaries, promotions and hiring should be equal (unequal) for men and women, (2) the best way (not the best way) for most women to develop their potential is to seek avenues of expression, other than being good wives and mothers only, (3) the communications media degrade (do not degrade) women by portraying them as sex objects or mindless dolls, (4) children's books should (should not) promote the traditional

roles for men and women, (5) many women who do the same work as their male colleagues earn (do not earn) substantially less money, (6) the housewife-mother role does (does not) really provide women with enough opportunity for self-fulfillment, (7) young men who enjoy cooking, sewing and taking care of young children should (should not) discuss these interests very cautiously, since they are likely to be considered effeminate, (8) women in medical school who have earned first rank in class should (should not) maintain the rank, regardless of male peer pressure, (9) employers who select men employees rather than women because they believe (do not believe) that women employees are more unstable, more likely to move because of husband's job or that they simply should stay at home with the family is biased against women, and (10) a man could (could not) be respected who worked half-time, and whose wife worked half-time while both shared equally in the care of children and home duties. All of these variables characterizing Factor III appear to represent views on the liberated sex role for men and women.

In additional validity studies of the SRAS, the 43 items of this instrument were found to discriminate significantly between the attitudes of male and female educators at the .001 level (Handley and Walker, 1978).

COLLECTION OF DATA PROCEDURES

After the instruments were constructed and pretested, they were administered to the 84 vocational educators and 641 secondary level students. Data were collected by the associate investigator in cooperation with school counselors in each of the 20 participating centers located throughout the state. Instruments were administered to students in small group sessions

composed of 25 or fewer subjects. Directions for responding to all instruments were read aloud to the student subjects. Care was taken in insure that each individual understood how to perform the expected tasks. Students completed the attitude scale of the Career Maturity Inventory, the Characteristics of Workers Survey, the Career Suitability Index, and the Vocational Student Background Survey.

The vocational directors, counselors and teachers participating in the study completed their responses to the Sex Role Attitude Survey, the Characteristics of Workers Survey and the Career Suitability Index during their free time on the day of the investigator's visit to their center.

METHODS OF DATA ANALYSIS

A canonical correlation statistical program developed by Veldman (1967) was employed for relating background and career influence factors to attitudes which the traditional and nontraditional vocational females held toward men and women working in nontraditional work roles. In this model the 45 career influence variables assessed by the Vocational Student Background Survey, the two factors measuring career suitability for males and females by the Career Suitability Index and the overall attitudinal scale of Crites' Career Maturity Inventory were employed as predictor variables. Attitudes toward nontraditional work roles as measured by ten factors derived from the Characteristics of Workers Survey was employed as the dependent variables in the canonical analysis. Two separate canonical models were computed, one predicting the relationship between the two sets of variables for the female students enrolled in traditional vocational programs and the other predicting the same relationship for female students in nontraditional programs of study.

A discriminant analysis statistical model documented by Nie and associates (1975) was used for analyzing data needed for answering the third research program. In this analysis, group membership (those studying in traditional programs as contrasted with those studying in nontraditional programs) was employed as the dependent variable. Independent variables consisted of variables measured by the Vocational Student Background Survey, the Career Suitability Index, Crites' attitudinal scale for career maturity and the 10 attitudinal measuring factors derived from the Characteristics of Workers Survey.

RESULTS OF STUDY

Three canonical factors were discovered which described relationships between career influence variables and the attitudes of traditional female students toward nontraditional work roles. These factors are presented in Table 5.

Separate variables loading .30 or more with significant canonical factors were employed for describing the characteristics of the three roots. The first canonical root describing 55% of the common variance appeared to be associated with the students' concept of the femininity of women working in nontraditional roles (day care center aides). Career related factors which correlated with these attitudes were their perception of the positive influence of male friends upon their vocational study (.36) and negative influences of school administrators in recruiting males (-.35) and females (-.31) into nontraditional vocational studies. Influence of attitudes of regular teachers toward nontraditional studies for males (-.35) was also correlated negatively with traditional female students' positive attitudes

Table 5

Variables Predicting Traditional Female Students' Attitudes Toward Nontraditional Work Roles

Variables[a]	Canonical Roots I	II	III
Predictor Set			
Race (black vs. white)	-.17	.07	(-.45)
High School Grades Earned	.07	(.40)	-.03
Mothers' Influence on Vocational Study	.08	.06	(.37)
Influence of Female Friends on Vocational Study	.18	.05	(.34)
Influence of Male Friends on Vocational Study	(.36)	-.04	.06
Influence of Regular Teachers on Vocational Study	.21	-.02	(.35)
Influence of Employer on Vocational Study	.05	-.02	(.33)
Chose Vocational Area Because it "Sounded Interesting"	-.03	(.33)	.14
Influence Attitudes of Mother Toward NTF Work Role	-.26	.07	(.35)
Influence Attitudes of Father Toward NTF Work Roles	-.25	.21	(.31)
Influence Attitudes of Other Family Toward NTF Studies	-.26	.17	(.34)
Influence Attitudes of School Administrators Toward NTF Studies	(-.31)	-.12	.20
Influence Attitudes of Mother Toward NTM Work Role	-.18	.07	(.40)
Influence Attitudes of Regular Teachers Toward NTM Studies	(-.35)	.02	.15
Influence Attitudes of School Administrators Toward NTM Studies	(-.30)	.02	.06
Criterion Set			
NTM Work Role (Receptionist)	.11	(.33)	(.48)
NTF Work Role (Auto Mechanic)	.12	.13	(.54)
NTM Work Role (Day Care Aide)	(.36)	(.47)	(.57)
NTF Work Role (Welder)	-.16	-.16	(.40)
NTF Femininity Scale	(.37)	.27	(-.50)
NTM/NTF Self-Control Scale	.03	.05	(-.68)
NTM/NTF Competency Scale	-.26	(.41)	.13
Canonical Roots	.5550	.4257	.3866
R	.7450	.6524	.6218
Chi Square	121.44	83.18	73.32
df	58	56	54
Probability	.001	.012	.046

[a]Variables listed are those loading .30 or more with significant canonical factors

toward femininity for women in nontraditional jobs. In brief, the relationship appears to indicate that traditional females who rate nontraditional workers higher also believe that attitudes of administrators and teachers toward the entry of students into nontraditional studies would rate lower.

In the next canonical relationship, attitudes toward males working in nontraditional jobs, as well as toward the general competency of both males and females in nontraditional work roles, appear to be dimensioned. Students who earned higher grades in high school (.40) and those who listed "It sounded interesting" as the major reason they chose their course of vocational study (.33) were those who expressed more positive attitudes toward males in nontraditional study programs.

The third canonical factor which loaded positively toward both men and women working in nontraditional jobs, except for low overall ratings of both gender groups on self control (-.68) and the female group on femininity (.50) was more characteristic of white than black students. This pattern of attitudes was also held by those whose mothers' influence of choice of vocational study (.37) and mothers' attitudes toward nontraditional work roles for males (.40) and females (.35) were viewed as positive by the traditional students. Students who felt that female friends, regular teachers and employers influenced their personal choice of vocational programs and saw the attitudes of fathers and other members of their families as positive toward nontraditional jobs for women were also the ones who on this factor evaluated the performance of men and women performing specific nontraditional work tasks as positive. They, however, saw both men and women in nontraditional jobs as having less self control and the women in these nontraditional roles as less feminine.

The canonical factors derived in predicting nontraditional female students' attitudes toward nontraditional work roles from their background and career influencing factors describe more readily interpretable data. As noted in Table 6, the first canonical root explaining 47% of the common variance described attitudes characterized by negative feelings toward women working as welders (-.30) and positive toward men nurses (.32) and day care workers (.44) also felt that women in nontraditional jobs were feminine (.35). The only background factor associated with these traits was their perceived influence of attitudes of male friends toward nontraditional male work roles (.32) This relationship appears to be implying that nontraditional women who feel positive about men working in nontraditional jobs also view the attitudes of male friends toward traditional male work roles as an important factor associated with this career choice.

In the second canonical relationship, variables of race, high school average, perceived influence of male friends on choice of vocational study and perceived influence of attitudes of employers toward women entering nontraditional work roles were associated with nontraditional female students' evaluation of women's performance in nontraditional jobs, as well as the students' perceptions of the overall femininity and competency of women working in these jobs.

Generally, the traditional female students who expressed the most positive attitudes toward women working in these positions were black and earned lower high school grades.

Regarding the third research question, Table 7 lists 16 attitudinal variables and career influences which discriminated between traditional and nontraditional females when both teacher and student variables were included

Table 6

Predicting Nontraditional Female Students' Attitudes Toward Nontraditional Work Roles

Variables		
Predictor Variables		
Race (Black vs. White)	.07	(.40)
High School Grades Earned	.19	(-.35)
Influence of Male Friends on Vocational Study	.08	(.35)
Influence Attitudes of Male Friends Toward NTM Work Role	(.32)	.05
Influence Attitudes of Employer Toward NTF Work Role	-.13	(.30)
Criterion Variables		
NTM Work Role (Nurse)	(.32)	.02
NTF Work Role (Airline Pilot)	.25	(.35)
NTF Work Role (Auto Mechanic)	(-.20)	(.66)
NTM Work Role (Day Care Aide)	(.44)	.03
NTF Work Role (Welder)	(-.30)	(.37)
NTF Femininity Scale	(.35)	(.42)
NTM/NTF Competency Scale	.09	(.58)
Roots (R^2)	.4740	.3918
R	.6885	62.59
Chi Square	125.92	97.545
df	58	56
Probability	.001	.001

Table 7

Overall Career Influencing Variables Discriminating Between Traditional and Nontraditional Vocational Female Students

Discriminating Variables	F to Enter[a]	Wilks Lambda	Standardized Discriminant Coefficient[b]
Teacher bias/Career suitability - females	61.78	.86	.55
Teacher bias/Career suitability - males	134.41	.63	-.45
Teacher attitudes/NTF work role (airline pilot)	29.92	.58	-.45
Teacher attitudes/NTF femininity	51.79	.51	-.21
Teacher attitudes/NTM work role (receptionist)	22.48	.48	-.48
Student attitudes/NTM work role (day care aide)	13.09	.46	-.04
Student attitudes/NTM-NTF competency	10.39	.44	-.50
Bias teacher attitudes/ Nontraditional work roles	19.12	.41	.29
Influence of brother on vocational area chosen	14.16	.40	-.41
Perceived attitude of male friends/ NTF work role	9.23	.38	-.09
Influence of regular teachers on vocational area	7.78	.37	-.09
Student bias/Career suitability - males	7.03	.36	.06
Relationship of part-time job to studies	7.28	.35	.15
Holding part-time job currently	5.32	.35	.05
Student career maturity attitudes	5.02	.34	.08
Student attitude/NTM self control	4.52	.33	.08

[a]Only variables making significant change (.01 level) were included in discriminant set.

[b]Negative functions load toward nontraditional groups.

in the predictor set. All of these variables, when added stepwise to the discriminant function, explained a significant amount of the variance associated with student's assignment to career choice groups. The derived function produced a canonical correlation of .83 when predicting group membership for the female students. Over 94% of the female subjects could be correctly classified as studying in either nontraditional or traditional vocational programs on the basis of variables in this function.

As given in Table 7, seven of the variables in the discriminant set were teacher attitudes. Furthermore, the first five variables to enter the discriminant factor were teacher attitudinal variables. Five of the discriminant variables were student attitudes as assessed by the Career Suitability Index, the Characteristics of Workers Survey and the attitudinal scale of the Career Maturity Inventory. Three significant variables were related to the influence of significant others on the development of nontraditional careers and two variables were associated with part-time jobs.

In interpreting the standardized discriminant functions given in Table 7, the nontraditional female students, as compared to their traditional counterparts, were taught by teachers who had less biased attitudes toward the appropriateness of all vocational areas for study by both females and males at the high school level. The teachers of nontraditional females had more positive attitudes toward females working as airplane pilots and toward males working as receptionists. These teachers, as contrasted with the teachers of traditional females, saw nontraditional women workers as more feminine. They also were less biased in their attitudes in general toward nontraditional work roles and lifestyles for both men and women.

In this analysis the nontraditional students, themselves, rated nontraditional workers (both male and female) as more competent and as having more self control. Their attitudes toward males working as day care aides were more positive than were those of their traditional female counterparts. Nontraditional females were also less biased toward the suitability of all vocational areas for study by males. However, they scored lower on measures of career maturity than did the traditional group.

Male friends were seen more important as significant others who might restrict females' entry into nontraditional jobs by nontraditional females than by traditional females. Nontraditional students claimed less influence from regular teachers and more influence from brothers in their decision to enter their specific area of vocational study than did traditional students.

Fewer of the nontraditional students had part-time jobs and, consequently, they saw a lower relationship between their current studies in vocational education and their part-time jobs than did the traditional female students.

IMPLICATIONS OF THE STUDY

The relationship of the influence of significant others and their attitudes toward appropriate work roles for women to the attitudes which female students, themselves, hold toward nontraditional work roles and to their decision to enter nontraditional fields of study was supported in this study. High school females having stereotyped attitudes toward appropriate sex-work roles for women were those more influenced by female figures (peers and mothers) in their career choices. Those who reconciled femininity with nontraditional job performances for women were more influenced

by male friends. Attitudes of vocational teachers toward nontraditional work roles were found to be highly correlated with students' election of nontraditional courses while in high school. As hypothesized, the attitudes of the students, themselves, toward nontraditional work roles were also effective discriminators between the groups of traditional and nontraditional female students.

Results of this study appear to have strong implications for counseling of students as they consider programs of study leading to the development of career choices. In an earlier study utilizing the same data bank, Handley and Walker (1979) reported that counselors were viewed as influential in the development of these students' career interests in nontraditional areas of vocational education. If counselors can assist students in exploring the concept of femininity (as not stereotyped by work role), for example, then female students in rural regions should be more open in their consideration of career alternatives. Such learning opportunities need to be implemented more for both male and female students, since the influence of male friends upon the choice of study areas by young women is clearly evident at the high school level. Also, the need to work with parent groups to assist them in exploring their attitudes toward appropriate career choices for women is evident.

If both counselors and teachers, through self study, can examine their attitudes toward appropriate careers for women, then perhaps they can also reflect less sex bias in their attitudes toward vocational development. Freedom from such bias in the attitudes of significant others in the school setting will allow adolescents more freedom in selection of career alternatives.

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